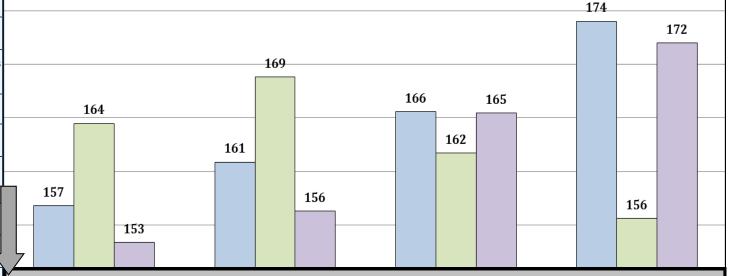
| 300 | | | | | |
|-----|---|--|--|--|--|
| 215 | Advanced | | | | |
| 175 | Draw a conclusion about soil permeability using data—Partial (CR) | | | | |
| 174 | Describe the competition between two species—Complete (CR) | | | | |
| 171 | Identify a function of a human organ system (MC) | | | | |
| 170 | Proficient | | | | |
| 167 | Describe the evidence for chemical change—Partial (CR) | | | | |
| 165 | Describe the energy transfer between two systems—Complete (CR) | | | | |
| 162 | Read a motion graph (MC) | | | | |
| 157 | Draw a conclusion based on fossil evidence (MC) | | | | |
| 156 | Select and explain the useful properties of a material used in an industrial process—Partial (CR) | | | | |
| 153 | Predict a geological consequence of tectonic plate movement (MC) | | | | |
| 151 | Identify the mechanism of a weather pattern (MC) | | | | |
| 148 | Recognize a factor that affects the success of a species (MC) | | | | |
| 141 | Basic | | | | |
| 136 | Identify the sequence of formation of the Earth's features (MC) | | | | |
| 134 | Identify an example of kinetic energy (MC) | | | | |
| 131 | Predict the effect of an environmental change on an organism (MC) | | | | |
| 128 | Explain an experimental setup to study populations of organisms (MC) | | | | |
| 127 | Recognize how plants use sunlight (MC) | | | | |
| 122 | Explain the effects of human land use on wildlife—Partial (CR) | | | | |
| 0 | Favorite - Overall Science - | | | | |
| | MT - 2011 Future - Overall Science - MT - 2011 Likes Science - Overall Science - MT - 2011 | | | | |



8th Grade NAEP Science Findings in Montana



8th grade students should be able to demonstrate relationships among closely related science principles. Identify evidence of chemical changes; explain and predict motions of objects using position time graphs; explain metabolism, growth, and reproduction in cells, organisms, and ecosystems; use observations of the Sun, Earth, and Moon to explain visible motions in the sky; and predict surface and ground water movements in different regions of the world. Explain and predict observations of phenomena at multiple scales, from microscopic to macroscopic and local to global, and to suggest examples of observations that illustrate a science principle. Use evidence from investigations in arguments that accept, revise, or reject scientific models. Use scientific criteria to propose and critique alternative individual and local community responses to design problems.



8th grade students should be able to state or recognize correct science principles. Explain and predict observations of natural phenomena at multiple scales, from microscopic to global. Describe properties and common physical and chemical changes in materials; describe changes in potential and kinetic energy of moving objects; describe levels of organization of living systems—cells, multicellular organisms, and ecosystems; identify related organisms based on hereditary traits; describe a model of the solar system; and describe the processes of the water cycle. Design observational and experimental investigations employing appropriate tools for measuring variables. Propose and critique the scientific validity of alternative individual and local community responses to design problems.



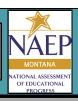
NOTE: The NAEP Science scale ranges from 0 to 300. Detail may not sum to totals because of rounding. Some apparent differences between estimates may not be statistically significant. **SOURCE**: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2011 Science Assessment.

| 300 | | | | | | |
|-----|---|---|-----------------------------|--------------------------|--|---|
| 215 | Advanced | | | | | |
| 175 | Draw a conclusion about soil permeability using data—Partial (CR) | MONTANA | th Grade | NAEP So | cience Findings in I | Montana NAEP |
| 174 | Describe the competition between two species—Complete (CR) | NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS | | | | NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS |
| 171 | Identify a function of a human organ system (MC) | | | | osely related science principles. Identify evidence of th, and reproduction in cells, organisms, and ecosyst | |
| 170 | Proficient | | | | ground water movements in different regions of the | |
| 167 | Describe the evidence for chemical change—Partial (CR) | | | | ocal to global, and to suggest examples of observation cientific models. Use scientific criteria to propose an | |
| 165 | Describe the energy transfer between two systems—Complete (CR) | community responses to | design problems. | | | • |
| 162 | Read a motion graph (MC) | | | | | 174 173 |
| 155 | Draw a conclusion based on fossil | 164 | 161 | 169 | 166 162 165 | 164 172 |
| 157 | evidence (MC) | 157 | 161 | 160 156 | 157 150 154 | 156 |
| 156 | Select and explain the useful properties of a material used in an industrial process—Partial (CR) | 140 | 1351 | 148 | 144 | 142 |
| 153 | Predict a geological consequence of tectonic plate movement (MC) | | | | | |
| 151 | Identify the mechanism of a weather pattern (MC) | | | | | |
| 148 | Recognize a factor that affects the success of a species (MC) | | - | - | nciples. Explain and predict observations of natural emical changes in materials; describe changes in pot | - |
| 141 | Basic | | | | Ilular organisms, and ecosystems; identify related or | |
| 136 | Identify the sequence of formation of the Earth's features (MC) | scribe a model of the sol | ar system; and describe the | e processes of the water | er cycle. Design observational and experimental invergentative individual and local community responses | estigations employing appropriate tools |
| 134 | Identify an example of kinetic energy (MC) | | | | | |
| 131 | Predict the effect of an environmental change on an organism (MC) | | | | | |
| 128 | Explain an experimental setup to study populations of organisms (MC) | Gr 08 | | Gr 08 | Gr 08 | Gr 08 |
| 127 | Recognize how plants use sunlight (MC) | Strongly disagn | ee | Disagree | Agree Response | Strongly agree |
| 100 | □ Favorite - Overall Science - N | MT - 2011 | NOTE: The NAEP Sci | ence scale ranges fron | - | ounding Some apparent differences |
| 122 | ■ Favorite - Overall Science - N | NPUB - 2011 | | | n 0 to 300. Detail may not sum to totals because of runificant. SOURCE : U.S. Department of Education, essment of Educational Progress (NAEP), 2011 Scientific Scien | Institute of Education Sciences, National nee Assessment. |
| 0 | ☐ Future - Overall Science - M | T - 2011 | Retrieved from | | | |

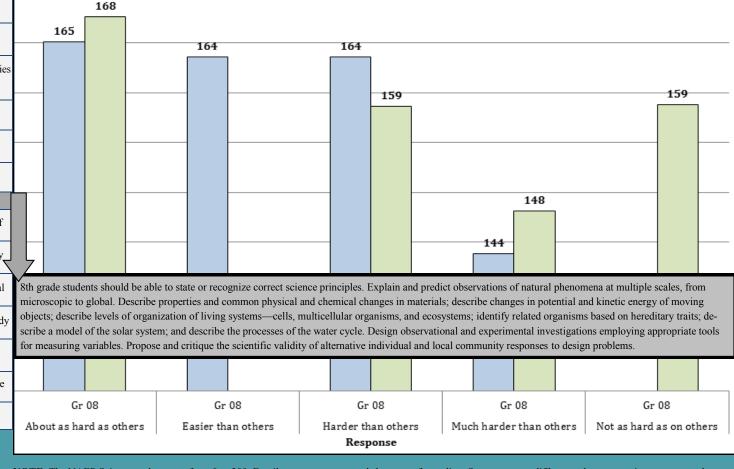
| 300 | | | | | |
|-----|---|--|--|--|--|
| 215 | Advanced | | | | |
| 175 | Draw a conclusion about soil permeability using data—Partial (CR) | | | | |
| 174 | Describe the competition between two species—Complete (CR) | | | | |
| 171 | Identify a function of a human organ system (MC) | | | | |
| 170 | Proficient | | | | |
| 167 | Describe the evidence for chemical change—Partial (CR) | | | | |
| 165 | Describe the energy transfer between two systems—Complete (CR) | | | | |
| 162 | Read a motion graph (MC) | | | | |
| 157 | Draw a conclusion based on fossil evidence (MC) | | | | |
| 156 | Select and explain the useful properties of a material used in an industrial process—Partial (CR) | | | | |
| 153 | Predict a geological consequence of tectonic plate movement (MC) | | | | |
| 151 | Identify the mechanism of a weather pattern (MC) | | | | |
| 148 | Recognize a factor that affects the success of a species (MC) | | | | |
| 141 | Basic | | | | |
| 136 | Identify the sequence of formation of the Earth's features (MC) | | | | |
| 134 | Identify an example of kinetic energy (MC) | | | | |
| 131 | Predict the effect of an environmental change on an organism (MC) | | | | |
| 128 | Explain an experimental setup to study populations of organisms (MC) | | | | |
| 127 | Recognize how plants use sunlight (MC) | | | | |
| 122 | Explain the effects of human land use on wildlife—Partial (CR) | | | | |
| 0 | Difficulty - Overall Science - | | | | |
| | □ Effort - Overall Science - MT - 2011 | | | | |



8th Grade NAEP Science Findings in Montana



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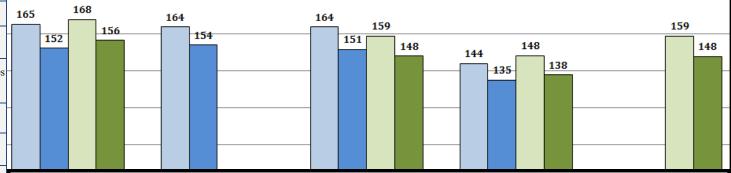
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| | | | | nam | III |
|-----|---|--------|-------------------------------------|---------------------|--------|
| 300 | | | <u> </u> | | |
| 215 | Advanced | | | | |
| 175 | Draw a conclusion about soil permeability using data—Partial (CR) | | AE ONTANA | P | 81 |
| 174 | Describe the competition between two species—Complete (CR) | OF E | IAL ASSESSI DUCATION PROGRESS | | |
| 171 | Identify a function of a human organ system (MC) | _ | | dents s | |
| 170 | Proficient | | | bjects u explair | _ |
| 167 | Describe the evidence for chemical change—Partial (CR) | of phe | nomer | na at mu m inves | ıltipl |
| 165 | Describe the energy transfer between two systems—Complete (CR) | | | esponse | - |
| 162 | Read a motion graph (MC) | 165 | | 168 | |
| 157 | Draw a conclusion based on fossil evidence (MC) | _ | 152 | | 156 |
| 156 | Select and explain the useful properties of a material used in an industrial process—Partial (CR) | | | | |
| 153 | Predict a geological consequence of tectonic plate movement (MC) | | | | |
| 151 | Identify the mechanism of a weather pattern (MC) | _ | | | |
| 148 | Recognize a factor that affects the success of a species (MC) | _ | | idents s to glob | |
| 141 | Basic | | _ | ribe lev | |
| 136 | Identify the sequence of formation of the Earth's features (MC) | scribe | a mod | lel of th | e so |
| 134 | Identify an example of kinetic energy (MC) | | | | |
| 131 | Predict the effect of an environmental change on an organism (MC) | _ | | | |
| 128 | Explain an experimental setup to study populations of organisms (MC) | | C | 08 | |
| 127 | Recognize how plants use sunlight (MC) | Abou | | rd as o | ther |
| 122 | □Difficulty - Overall Science | e - M | T - 2 | 011 | |
| 0 | ■Difficulty - Overall Science | e - Ni | PUB- | - 201 | 1 |
| | □Effort - Overall Science - | MT - : | 2011 | | |
| | ■Effort - Overall Science - | NPUE | - 20 | 11 | |

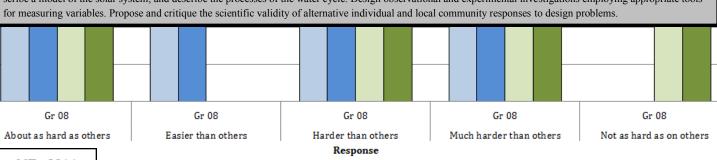
8th Grade NAEP Science Findings in Montana



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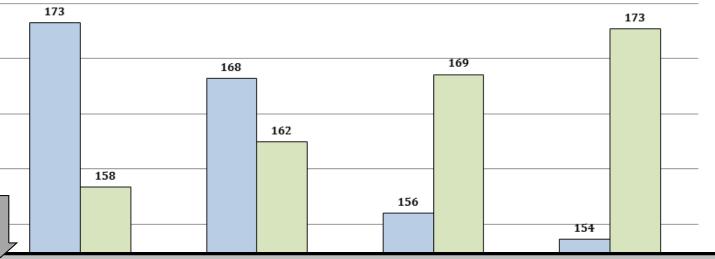
| 300 | | | | | |
|-----|---|--|--|--|--|
| 215 | Advanced | | | | |
| 175 | Draw a conclusion about soil permeability using data—Partial (CR) | | | | |
| 174 | Describe the competition between two species—Complete (CR) | | | | |
| 171 | Identify a function of a human organ system (MC) | | | | |
| 170 | Proficient | | | | |
| 167 | Describe the evidence for chemical change—Partial (CR) | | | | |
| 165 | Describe the energy transfer between two systems—Complete (CR) | | | | |
| 162 | Read a motion graph (MC) | | | | |
| 157 | Draw a conclusion based on fossil evidence (MC) | | | | |
| 156 | Select and explain the useful properties of a material used in an industrial process—Partial (CR) | | | | |
| 153 | Predict a geological consequence of tectonic plate movement (MC) | | | | |
| 151 | Identify the mechanism of a weather pattern (MC) | | | | |
| 148 | Recognize a factor that affects the success of a species (MC) | | | | |
| 141 | Basic | | | | |
| 136 | dentify the sequence of formation of he Earth's features (MC) | | | | |
| 134 | Identify an example of kinetic energy (MC) | | | | |
| 131 | Predict the effect of an environmental change on an organism (MC) | | | | |
| 128 | Explain an experimental setup to study populations of organisms (MC) | | | | |
| 127 | Recognize how plants use sunlight (MC) | | | | |
| 122 | Explain the effects of human land use on wildlife—Partial (CR) | | | | |
| 0 | Required - Overall Science - MT - | | | | |
| | 2011 | | | | |
| | □ Science Not Schoolwork - Overall Science - MT - 2011 | | | | |



8th Grade NAEP Science Findings in Montana



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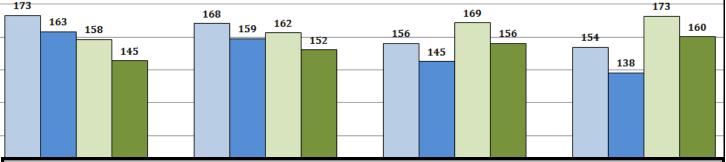
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| | T | Mullollul Assessi | | | | |
|-----|---|--|--|--|--|--|
| 300 | | | | | | |
| 215 | Advanced | NIACD | | | | |
| 175 | Draw a conclusion about soil permeability using data—Partial (CR) | NAEP 8th Gra | | | | |
| 174 | Describe the competition between two species—Complete (CR) | NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS | | | | |
| | Identify a function of a human organ | 8th grade students should be able to de | | | | |
| 171 | system (MC) | motions of objects using position time | | | | |
| 170 | Proficient | and Moon to explain visible motions in | | | | |
| 167 | Describe the evidence for chemical change—Partial (CR) | of phenomena at multiple scales, from evidence from investigations in argume | | | | |
| 165 | Describe the energy transfer between two systems—Complete (CR) | community responses to design probler | | | | |
| | | 173 | | | | |
| 162 | Read a motion graph (MC) | 163 158 | | | | |
| 157 | Draw a conclusion based on fossil evidence (MC) | 145 | | | | |
| 156 | Select and explain the useful properties of a material used in an industrial process—Partial (CR) | | | | | |
| 153 | Predict a geological consequence of tectonic plate movement (MC) | | | | | |
| 151 | Identify the mechanism of a weather pattern (MC) | | | | | |
| 148 | Recognize a factor that affects the success of a species (MC) | 8th grade students should be able to sta microscopic to global. Describe proper | | | | |
| 141 | Basic | objects; describe levels of organization | | | | |
| 136 | Identify the sequence of formation of the Earth's features (MC) | scribe a model of the solar system; and for measuring variables. Propose and c | | | | |
| 134 | Identify an example of kinetic energy (MC) | | | | | |
| 131 | Predict the effect of an environmental change on an organism (MC) | | | | | |
| 128 | Explain an experimental setup to study populations of organisms (MC) | Gr 08 Strongly disagree | | | | |
| 127 | Recognize how plants use sunlight (MC) | | | | | |
| 122 | □ Required - Overall Science | - MT - 2011 | | | | |
| 0 | ■ Required - Overall Science | - NPUB - 2011 | | | | |
| | Science Not Schoolwork - 0 | Overall Science - MT - 2011 | | | | |
| | Science Not Schoolwork - Overall Science - NPUB - 2011 | | | | | |

8th Grade NAEP Science Findings in Montana



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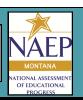
Retrieved from http://nces.ed.gov/nationsreportcard/naepdata/dataset.aspx

| 300 | | | ٦ | | | | | | | | |
|-----|---|-------------------------------------|-------------------------|--|--------------------------------|---|--------------------------------------|--|---------------------------------|---------------------------------------|---------------------------------------|
| 215 | Advanced Draw a conclusion about soil permea- | NAEI | 81 | th Grade | NAE | P Science | ce Fin | dings i | n Mo | ntana | NAEP |
| 175 | bility using data—Partial (CR) | NATIONAL ASSESSME OF EDUCATIONAL | NT | | | | | | | | NATIONAL ASSESSMENT OF EDUCATIONAL |
| 174 | Describe the competition between two species—Complete (CR) | 8th grade stude | ents shou | ld be able to demonstrat | e relationship | os among closely relate | ed science princi | ples. Identify evid | ence of chem | nical changes; exp | lain and predict |
| 171 | Identify a function of a human organ system (MC) | and Moon to e | xplain vis | position time graphs; e ible motions in the sky; | and predict s | surface and ground wat | ter movements in | n different regions | of the world. | . Explain and pred | ict observations |
| 170 | Proficient | | | e scales, from microsco | • | • | | * | | | |
| 167 | Describe the evidence for chemical change—Partial (CR) | | _ | tions in arguments that a design problems. | accept, revise | , or reject scientific me | odeis. Use scient | tific criteria to proj | oose and criti | | |
| 165 | Describe the energy transfer between two systems—Complete (CR) | | 165 | | | | 165 | | | □All Stdts MT - 201 | - Overall Science - 1 |
| 162 | Read a motion graph (MC) | | | | 164 | | | | | □Importar - MT - 20 | nce - Overall Science 111 |
| 157 | Draw a conclusion based on fossil evidence (MC) | | | | | | | | | 163 | |
| 156 | Select and explain the useful properties of a material used in an industrial process—Partial (CR) | | | | | | | | | | |
| 153 | Predict a geological consequence of tectonic plate movement (MC) | | | | | | | | | | |
| 151 | Identify the mechanism of a weather pattern (MC) | | | | | | | | | | |
| 148 | Recognize a factor that affects the success of a species (MC) | | | | | | | | 450 | | |
| 141 | Basic | | | | | | | | 159 | | |
| 136 | Identify the sequence of formation of the Earth's features (MC) | | | d be able to state or rec | | | | | | | |
| 134 | Identify an example of kinetic energy (MC) | jects; describe a model of the | levels of solar syst | Describe properties and organization of living stem; and describe the pr | ystems—cells ocesses of the | s, multicellular organis e water cycle. Design o | sms, and ecosyst observational an | ems; identify related experimental inv | ed organisms restigations en | based on heredita mploying appropr | ry traits; describe |
| 131 | Predict the effect of an environmental change on an organism (MC) | measuring var | iables. Pro | ppose and critique the so | cientific valid | ity of alternative indiv | ridual and local o | community respons | ses to design | problems. | |
| 128 | Explain an experimental setup to study populations of organisms (MC) | | 08 | G: | r 08 | Gr | 08 | Gr | 08 | | Gr 08 |
| 127 | Recognize how plants use sunlight (MC) | Impo | ortant | Not very | important | Somewhat Resp | important onse | Very im | portant | Alls | students |
| 122 | Explain the effects of human land use on wildlife—Partial (CR) | NOTE: The N. | AEP Scien | nce scale ranges from 0 OURCE: U.S. Departn AEP), 2011 Science Ass | to 300. Detail | • | | nding. Some appar | ent difference | es between estima | tes may not be |
| 0 | | | | AEP), 2011 Science Asses.ed.gov/nationsreportc | | | , 1 | 201101 | | , | |

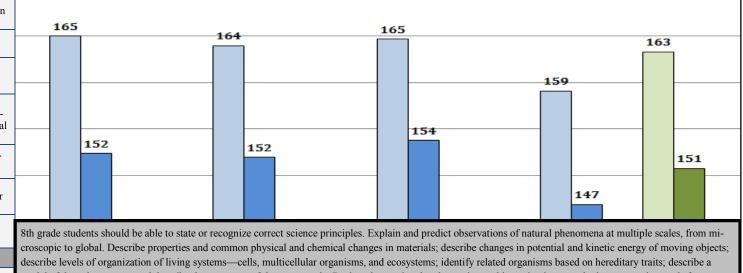
| 300 | | | | | |
|-----|---|--|--|--|--|
| 215 | Advanced | | | | |
| 175 | Draw a conclusion about soil permeability using data—Partial (CR) | | | | |
| 174 | Describe the competition between two species—Complete (CR) | | | | |
| 171 | Identify a function of a human organ system (MC) | | | | |
| 170 | Proficient | | | | |
| 167 | Describe the evidence for chemical change—Partial (CR) | | | | |
| 165 | Describe the energy transfer between two systems—Complete (CR) | | | | |
| 162 | Read a motion graph (MC) | | | | |
| 157 | Draw a conclusion based on fossil evidence (MC) | | | | |
| 156 | Select and explain the useful properties of a material used in an industrial process—Partial (CR) | | | | |
| 153 | process runnin (cre) | | | | |
| 151 | Identify the mechanism of a weather pattern (MC) | | | | |
| 148 | Recognize a factor that affects the success of a species (MC) | | | | |
| 141 | Basic | | | | |
| 136 | Identify the sequence of formation of the Earth's features (MC) | | | | |
| 134 | Identify an example of kinetic energy (MC) | | | | |
| 131 | Predict the effect of an environmental change on an organism (MC) | | | | |
| 128 | Explain an experimental setup to study populations of organisms (MC) | | | | |
| 127 | Recognize how plants use sunlight (MC) | | | | |
| 122 | Explain the effects of human land use on wildlife—Partial (CR) | | | | |
| 0 | | | | | |



8th Grade NAEP Science Findings in Montana

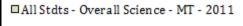


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model of the solar system; and describe the processes of the water cycle. Design observational and experimental investigations employing appropriate tools for measuring variables. Propose and critique the scientific validity of alternative individual and local community responses to design problems.

| Gr 08 | Gr 08 | Gr 08 | Gr 08 | Gr 08 |
|-----------|--------------------|--------------------|----------------|--------------|
| Important | Not very important | Somewhat important | Very important | All students |
| | | Response | | |



■ All Stdts - Overall Science - NPUB - 2011

□Importance - Overall Science - MT - 2011

■Importance - Overall Science - NPUB - 2011

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Retrieved from http://nces.ed.gov/nationsreportcard/naepdata/dataset.aspx

http://nces.ed.gov/nationsreportcard/itemmaps/index.asp

| 2011 Grade 8 | | NAEP Science Scale | | |
|--|---|--|---|----------------|
| ontent Classifications: | | | | |
| Earth & Space Sciences | ■ Physical Science | ▲ Life Science | | |
| | | □ 190 | | |
| 300 | | | rn in the volcanic activity of a region (MC) | |
| 300 | | ■ 184 Recognize an effect of ele | | |
| 1000 | | - | rock based on its features—Partial (CR) | |
| 290 | | ▲ 183 Recognize that plants prod | | |
| | ern due to collision of air masses—Complete (CR) | ■ 182 Select and explain the use | ful properties of a material used in an industrial process—Es | sential (CR) |
| 280 | | ▲ 180 Form a conclusion based of | on data about the behavior of an organism—Partial (CR) | |
| 270 | | □ 180 | | |
| 269 Describe the evidence for chemical | I change—Complete (CR) | 175 <u>Draw a conclusion about s</u> | soil permeability using data—Partial (CR) | |
| 266 <u>Identify chemically similar elements</u> | in the Periodic Table (MC) | ▲ 174 Describe the competition b | etween two species—Complete (CR) | |
| ▲ 264 Select and explain graph types and | draw graphs from data that compare insect behavi | iors—Complete (CR) 4 171 Identify a function of a hun | nan organ system (MC) | |
| 260 | | 171 Investigate the magnetic pr | operties of some common objects (MC) | |
| • 256 Explain the formation of a rock base | ed on its features—Complete (CR) | 170 Proficient | | |
| 250 | | □ 170 | | |
| | bout the behavior of an organism—Complete (CR) | ■ 167 Describe the evidence for | | |
| 240 | | | fer between two systems—Complete (CR) | |
| | draw graphs from data that compare insect behavi | ■ 162 Read a motion graph (MC) | | |
| 230 | | • 157 Draw a conclusion based | on foncil quidance (MC) | |
| 224 Explain a change in energy due to f | friction (MC) | | ful properties of a material used in an industrial process—Pa | urtial (CP) |
| 221 Draw a conclusion about soil perme | | | quence of tectonic plate movement (MC) | initial (ON) |
| 220 | eability using data—complete (CK) | • 151 Identify the mechanism of | | |
| | | □ 150 | | |
| 215 Advanced | on an addition Complete (CD) | | fects the success of a species (MC) | |
| 214 Explain the effects of human land u | ise on Wildlife—Complete (CR) | 141 Basic | | |
| • 213 Predict a lunar phenomenon (MC) | | □ 140 | | |
| | ern due to collision of air masses—Partial (CR) | 136 Identify the sequence of for | ormation of the Earth's features (MC) | |
| □ 210 | | 134 Identify an example of kine | tic energy (MC) | |
| 208 Explain the formation of a rock base | ed on its features—Essential (CR) | ▲ 131 Predict the effect of an en | vironmental change on an organism (MC) | |
| 203 Select and explain the useful prope | erties of a material used in an industrial process—Co | implete (CR) = 130 | | |
| 201 Relate characteristics of air masses | s to global regions (MC) | · | tup to study populations of organisms (MC) | |
| ▲ 200 Select and explain graph types and | draw graphs from data that compare insect behavi | | • • • | |
| ▲ 200 Identify the main source of energy | for certain organisms (MC) | • | an land use on wildlife—Partial (CR) | |
| 200 | | 120 | | |
| ■ 198 Identify the atomic components of the | he molecule (MC) | , | | |
| ■ 195 Determine a controlled variable in a | chemistry investigation (MC) | 0 | | |
| • 190 Identify a source of energy for Eart | · · · · · | Control Classification | | |
| 190 | | Content Classifications: • Earth & Space Sciences | Physical Science | ▲ Life Science |
| 100 | | - LL. II d opado dolollodo | _ / II you oo oo oo | |